

CLAIMS

1 1. A method of forming an array of focusing elements for use in a lithography system, said
2 method comprising the steps of:

3 providing a master element that includes at least one diffractive pattern at a first location with
4 respect to a target surface;

5 illuminating said master element to produce a first diffractive pattern on the target surface at
6 said first location;

7 moving said master element with respect to said target surface to a second location with
8 respect to the target surface; and

9 illuminating said master element to produce a second diffractive pattern on the target surface
10 at said second location.

1 2. The method as claimed in claim 1, wherein said step of illuminating said master element to
2 produce the first diffractive pattern on the target surface at said first location involves interfering a
3 first and third order diffracted beam from said master element.

1 3. The method as claimed in claim 1, wherein said step of illumination said master element to
2 produce the first diffractive pattern on the target surface at said first location involves interfering an
3 incident plane wave on said master element with a reference plane wave.

1 4. The method as claimed in claim 3, wherein said reference plane wave is directed in a
2 direction that is generally opposite that of said incident plane wave.

1 5. The method as claimed in claim 1, wherein step of illumination said master element to

2 produce the first diffractive pattern on the target surface at said first location involves the use of a
3 Dammann grating.

1 6. The method as claimed in claim 1, wherein said first diffractive pattern includes a Fresnel
2 zone plate.

1 7. The method as claimed in claim 1, wherein said first diffractive pattern is an amplitude
2 Fresnel zone plate.

1 8. The method as claimed in claim 1, wherein said first diffractive pattern is a phase Fresnel
2 zone plate.

1 9. The method as claimed in claim 1, wherein said diffractive pattern is apodized.

1 10. The method as claimed in claim 1, wherein said master element includes at least four
2 diffractive patterns.

1 11. The method as claimed in claim 1, wherein said step of illuminating said master element to
2 produce a first diffractive pattern on the target surface includes the use of a faceting aperture
3 multiplexing grating.

1 12. The method as claimed in claim 1, wherein said step of illuminating said master element to
2 produce a first diffractive pattern on the target surface includes the use of a Dammann grating.

1 13. The method as claimed in claim 1, wherein said step of illuminating said master element to

2 produce a first diffractive pattern on said target involves mutliplexing a pattern on said master
3 element to at least two patterns on said target surface.

1 14. A method of forming an array of focusing elements for use in a lithography system, said
2 method comprising the steps of:

3 providing a master element that includes at least one diffractive pattern at a first location with
4 respect to a target surface;

5 illuminating said master element to produce a first diffractive pattern on the target surface at
6 said first location, said first diffractive pattern providing a first set of at least one focusing element
7 for the lithography system;

8 moving said master element with respect to said target surface to a second location with
9 respect to the target surface; and

10 illuminating said master element to produce a second diffractive pattern on the target surface
11 at said second location, said second diffractive pattern providing a second set of at least one focusing
12 element for the lithography system.

1 15. The method as claimed in claim 14, wherein said step of illuminating said master element to
2 produce the first diffractive pattern on the target surface at said first location involves interfering a
3 first and third order diffracted beam from said master element.

1 16. The method as claimed in claim 1, wherein said step of illumination said master element to
2 produce the first diffractive pattern on the target surface at said first location involves interfering an

3 incident plane wave on said master element with a reference plane wave.